EXPANDED AGRIBUSINESS AND TRADE PROMOTION (USAID E-ATP)

In fulfillment of the following deliverable under task 3.3.1:

Transport cost assessments for each value chain along a key corridor updated annually

Poultry Value Chain (FY 2011)

Contract/ Project No.: EDH-1-00-00005-11

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FY 2011 UPDATE OF TRANSPORT AND LOGISTICS COST STUDY FOR POULTRY

USAID EXPANDED AGRIBUSINESS AND TRADE PROMOTION (E-ATP) PROJECT

June 2012

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USAID EXPANDED AGRIBUSINESS AND TRADE PROMOTION (E-ATP) PROJECT

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ACRONYMS

AI	Avian Influenza
ATP	Agribusiness and Trade Promotion Project
AU NEPAD	African Union-New Partnership for Africa's Development
CAADP	Comprehensive Africa Agriculture Development Program
CFAF	West African Franc
DOC	Day-old chick
E-ATP	Expanded Agribusiness and Trade Promotion Project
ECOWAS	Economic Community of West African States
GHC	Ghana Cedi
SPS	Sanitary and phytosanitary
TA	Transport Assistant
TLA	Transport and Logistics Advisor
USAID	United States Agency for International Development
VAT	Value-added tax
WAPA	West Africa Poultry Association

EXECUTIVE SUMMARY

Poultry is one of the most commonly consumed meats in West Africa. Chicken meat and eggs are major sources of protein for West African consumers. However, significant challenges to regional trade in poultry exist, particularly in transporting it around the region from production to consumption zones. In March 2011, members of the West Africa Poultry Association (WAPA) suggested that USAID's Expanded Agribusiness and Trade Promotion (E-ATP) Project assess the logistics and transport of day-old chicks (DOC) moving from Kumasi, Ghana, to Cotonou, Benin. DOCs are one of the most commonly traded poultry commodities in the region. In May and June 2011, a team led by Laura Jane Busch of CARANA Corporation travelled along the corridor and interviewed numerous actors in the logistics chain, including agents, hatchery managers, traders, and poultry farmers. In July 2011, the team published the Transport and Logistics Cost Study for Poultry.

The basis study quantified the constraints and costs involved with trading DOCs from Kumasi, Ghana, to Cotonou, Benin, by road. The study provided E-ATP and its stakeholders with a better understanding of how inefficiencies in the transport and logistics process relate to the overall operation of the value chain. It also recommended activities to address the most glaring inefficiencies. Among these are monitoring road harassment along the corridor and advocating for reductions in bribe costs.

The study's findings were presented to a group of industry stakeholders, who validated the conclusions and showed their support for the recommendations.

Six months after the original study, the E-ATP Accra transport team leader, Kossi Dahoui, was sent to update transport and logistics costs for DOCs along the corridor. Previously, it was agreed with project management that the update to the original study would be limited to an update of the road harassment costs observed. During the update, it became clear that the transporters utilized a different route to cross the border from Aflao to Lome, and therefore, some other costs were also updated. A comparison of costs in May-June 2011 with those in November-December 2011 showed a reduction of almost one-third (precisely 30 percent) in transport and logistics costs, owing to the fall of transport costs (18 percent), administrative costs (by 73 percent) and bribe costs (63 percent). Overall, however, the update found that the major problems and cost drivers identified in the original study remain, and that the original recommendations are still relevant.

FY 2011 UPDATE: KEY FINDINGS AND RECOMMENDATIONS

Findings	Recommendations
Transit times, delays, and use of inappropriate vehicles contribute to mortality and deterioration of layer chick health. • The lifetime effect of stressful transport on a DOC's health and productivity is estimated to be a 13% deterioration in value. • Mortality over the corridor as a whole is 5%, but can be up to 100% if problems in transport are encountered: unreliability is a major concern.	• Assistance for hatcheries to establish sales and distribution offices in regional end markets so that they can engage in direct sales with end buyers and organize end-to-end smooth transport from Kumasi • Partnerships with regional transport providers to offer end-to-end professional specialized transit services to DOC exporters • Assistance/access to finance for regional hatcheries to procure specialized vehicles and logistics equipment, possibly on a collective basis • Partnership with Darko Farms to highlight examples of best practices in transport and logistics, to encourage others to upgrade • Organization of importers for coordinated purchasing directly from Kumasi hatcheries
Hatcheries do not engage in end-to-end sales with buyers in Cotonou; trade is very disjointed and is organized by various middlemen. Importers are not organized, and many small-scale imports lead to low economies of scale, which drive transport costs (and time) upward. • DOCs are in transit for up to 48 hours (12 hours is recommended) and may change vehicles up to six times. • 82% of direct transport costs (fees paid to transport service providers) are found to be inefficient. • Unnecessary handling charges are incurred as chicks change hands and vehicles multiple times.	
Current border procedures and costs make legal cross-border trade in DOCs impractical, especially from Ghana into Togo. Confusing, disorganized, and lengthy processing was observed. Harassment at borders and along roads leads to further costs and delays. • 100% of traders interviewed smuggled DOCs through informal borders into Togo to avoid using the main border.	• Improvement of procedures at borders for DOCs, including awareness-building for control agents and establishment of special processing procedures for DOCs • Advocacy to the Economic Community of West African States (ECOWAS) to clarify legal texts in relation to DOC border processing
Biosecurity measures are insufficient; the risk of cross-contamination and spread of diseases such as Avian Influenza (AI) are high. The disastrous impact of AI has already been witnessed by West Africa during the 2006 outbreak. • Biosecurity measures taken at hatcheries and distribution centers vary widely from moderately good to non-existent. • Widespread use of passenger vehicles means in-transport biosecurity measures are not taken (e.g., disinfecting vehicles) and chicks are in constant contact with humans.	• Training on best practices for transport biosecurity included in workshops or seminars • As above, use of specialized vehicles and facilitating smooth end-to-end transit in one vehicle

1. INTRODUCTION

1.1 BACKGROUND

Transport and logistics in West Africa are slow, unpredictable, costly, and inefficient, severely limiting the ability of value chain actors in the region to trade efficiently in the region and resulting in high consumer prices for agricultural value chain products.

The E-ATP project is a three-year regional initiative launched in 2009. Building on the success of the Agribusiness and Trade Promotion (ATP) project, E-ATP has focused on three additional value chains: poultry, rice, and millet/sorghum. E-ATP aims to increase the value and volume of intra-regional agricultural trade through its value chain development and associated activities along the major commercial corridors linking Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Niger, Nigeria, Senegal, and Togo. E-ATP is designed to contribute to achieving the 6-percent annual agricultural growth target set under the Comprehensive Africa Agriculture Development Program (CAADP) of the African Union's New Partnership for Africa's Development (AU-NEPAD).

E-ATP works to "reduce significantly the incidence of physical barriers to moving agricultural and related commodities regionally in West Africa." As part of this objective, the E-ATP team delivers annually an update of transport cost assessments for each value chain along a key corridor.

In May-June 2011, E-ATP conducted a Transport and Logistics Cost Study for poultry along the Kumasi–Accra–Lome–Cotonou corridor, with focus on DOCs. The team found, among other issues, 1) a lack of organization of importers and exporters; 2) inappropriate Aflao, Ghana, to Kodzoviakope, Togo, border-crossing procedures; and 3) inappropriate vehicles and handling practices. To tackle these challenges, the study recommended 1) organization of importers and exporters; 2) improvement of procedures at the Aflao–Kodzoviakope border; and 3) training on export requirements, documentation, border procedures, and transport best practices. The publication of the report in July 2011 constitutes the FY10 deliverable for a transport cost assessment for poultry along the Kumasi–Cotonou corridor. Alongside the study, a package of best practices in DOC value chain logistics was also published.

E-ATP worked with poultry stakeholders and officials to implement the listed recommendations. This current FY11 study serves as the annual update of the original study, showing how costs have changed as a result of the implementation of the recommendations.

As agreed with project management, this update is limited to updating the road harassment costs found in the original study.

1.2 STUDY APPROACH

To achieve the objective of updating the original study, the following tasks were identified:

- **Review** of the original study
- **Interaction** with key stakeholders named in the original survey
- **Field research** to gather data on updated bribe/road harassment costs along the corridors
- **Analysis** of collected data to determine current costs and remaining inefficiencies emerging from the stakeholder interviews
- **Production of an FY11 update report** on all findings, including the following key indicators and deliverables:
    - A table of transport and logistics costs
    - A concise report summarizing key findings

1.3 METHODOLOGY

1.3.1 PRIMARY RESEARCH

In November 2011, Ali Issaka, the Accra-based Transport Assistant (TA), travelled several times to Kumasi and visited hatcheries to obtain information on DOC orders placed by Togolese and Beninese poultry farmers.

In December 2011, the team followed six deliveries to poultry farmers located in Togo and Benin. For each delivery, they observed loading of DOCs in passenger vehicles; harassment along the corridor; off-loading in Accra and loading into a second passenger vehicle; informal border crossing (using a bush road) at Aflao, Ghana, to Togo; loading into a third vehicle; another off-loading at Hilla Condji; border crossing from Togo to Benin; loading into a fourth vehicle; and final transport to the trader/poultry farmer premises.

1.3.2 SECONDARY RESEARCH

The main reference for the current update is the original Poultry Transport and Logistics Study submitted in July 2011. The team also referred to the E-ATP road harassment survey,

For more detailed information on the study methodology, please see the annex.

2. TRANSPORT AND LOGISTICS COSTS OBSERVED IN ORIGINAL STUDY

This section provides an overview of the key qualitative and quantitative findings of the original study. For full details, please refer to the original report published in July 2011.

2.1 KEY QUALITATIVE FINDINGS FROM ORIGINAL STUDY

The original study had the following key *qualitative* findings:

- **Long and stressful transit has long-term effect on a DOC's lifelong health and on its long-term productivity as a layer.**
- **High transport costs, quality concerns (linked to transport stress), and unreliability reduce the competitiveness of Ghanaian chicks vis-à-vis European imports (using air transit) in end markets.**
- **Transit times and delays contribute to mortality and deterioration of chick health in transit**.
    - Optimal travel time is 12 hours. DOCs along this corridor are in transit for up to 48 hours. Given the distance, a normal drive directly from Kumasi to Cotonou without stopping should take no more than 10 hours.
    - Chicks change vehicles up to *6 times* on the 606 kilometer journey from Kumasi to end buyers in Cotonou, mainly due to control procedures, harassment, and the unwillingness of small-scale transporters to go the distance.
    - Intermediaries/middlemen organize the majority of cross-border trade observed and chicks may change hands several times.
    - Hatcheries rarely export themselves and hardly ever organize end-to-end transit.
    - Current border procedures make legal cross-border trade in DOCs impractical, especially from Ghana into Togo. Confusing, disorganized, and lengthy processing was observed. Delays caused by road and border harassment were cited as a key cause of mortality.
    - *Nearly all DOCs are smuggled* through the informal bush border into Togo (which is impassable by vehicles); some also use an informal border crossing into Benin (across the river on a pirogue).

- **Inappropriate vehicles and handling practices accelerate the rate of deterioration of DOC health.**
    - There is widespread use of inappropriate vehicles such as taxis and passenger

buses (even mopeds); temperature controls and packing arrangements/stability are poor.

- There are poor packing practices (e.g., without room for ventilation), lack of equipment for proper packing (e.g., trolleys/racks), and lack of awareness of actors on proper handling.

- **Low economies of scale drive transport costs (and time) upward.**
  - Importers are not organized; there are many small-scale imports.
  - There are numerous middlemen (agents) with very few instances of end-to-end delivery services by hatcheries.

- **Biosecurity measures are insufficient; there is a high risk of cross-contamination and spread of disease**.
  - Biosecurity measures taken at hatcheries and distribution centers vary widely from moderately good to non-existent.
  - Widespread use of passenger vehicles means in-transport biosecurity measures are not taken (e.g., disinfecting vehicles) and chicks are in constant contact with humans (boxes end up full of feces).

2.2 COST DRIVERS

The following table summarizes the *quantitative* cost drivers at each stage of the logistics chain found in the original study:

Location	Item Description	Percent	US$/box of 50 DOCs	Percent of Hatchery Price	Percent of Sales Price	Borne by
Kumasi	Veterinary movement permit		0.03	0.07%	0.04%	Hatchery
Kumasi	Veterinary health export document		0.12	0.26%	0.13%	Hatchery
Kumasi	Customs export document		0.50	1.12%	0.55%	Hatchery
Kumasi	Customs document bribe		0.83	1.86%	0.92%	Hatchery
Kumasi	Pre-transport preparation, labor		0.25	0.57%	0.28%	Hatchery
Kumasi	Losses during pre-transport preparation	0.30%	0.27	0.61%	0.30%	Hatchery

Kumasi	Carton purchase		0.81	1.82%	0.90%	Hatchery
Kumasi	Sales price in Kumasi		44.72			
Kumasi–Accra	Transport to Accra		1.08	2.42%	1.20%	Hatchery
Kumasi–Accra	Road harassment Kumasi–Accra		0.02	0.05%	0.02%	Hatchery/Agent 2
Accra	Handling in Accra		0.84	1.88%	0.93%	Agent 1
Accra	Sales Price in Accra		58.53			
Accra–Aflao	Transport Accra–Aflao		1.14	2.54%	1.26%	Agent 1
Accra–Aflao	Road harassment Accra–Aflao		0.17	0.38%	0.19%	Agent 1
Aflao–informal border	Transport Aflao–border		4.30	9.62%	4.77%	Agent 1
Aflao	Handling in Aflao		0.23	0.51%	0.25%	Agent 1
Aflao	Veterinary inspection		3.33	7.45%	3.70%	Agent 1
Alfao	Harassment at Ghana/Togo informal border		1.53	3.42%	1.69%	Agent 1
Kumasi–Aflao	Losses Kumasi–Aflao	2.00%	1.81	4.04%	2.00%	Hatchery/Agent
	Sales Price in Aflao		67.05			
Aflao–Hilla Condji	Transport Aflao–Hilla Condji		1.03	2.30%	1.14%	Agent 2
Aflao–Hilla Condji	Road harassment Aflao–Hilla Condji		0.59	1.32%	0.65%	Agent 2
Hilla Condji	Handling at Hilla-Condji		0.09	0.21%	0.10%	Agent 2
Hilla Condji	Harassment at Togo/Benin border		1.33	2.98%	1.48%	Agent 2
Hilla Condji–Cotonou	Transport Hilla Condji–Cotonou		0.89	2.00%	0.99%	Agent 2

Hilla Condji–Cotonou	Road harassment Hilla Condji–Cotonou		0.41	0.92%	0.46%	Agent 2
Cotonou	Veterinary import permit Benin		0.58	1.30%	0.65%	Agent 2
Aflao–Cotonou	Losses Aflao–Cotonou	2.53%	2.28	5.10%	2.53%	Agent 2
	Sales price in Cotonou		90.12			
Kumasi–Cotonou	Lifetime effect of stressful transport	12.9%	11.63	26.00%	12.90%	End buyer

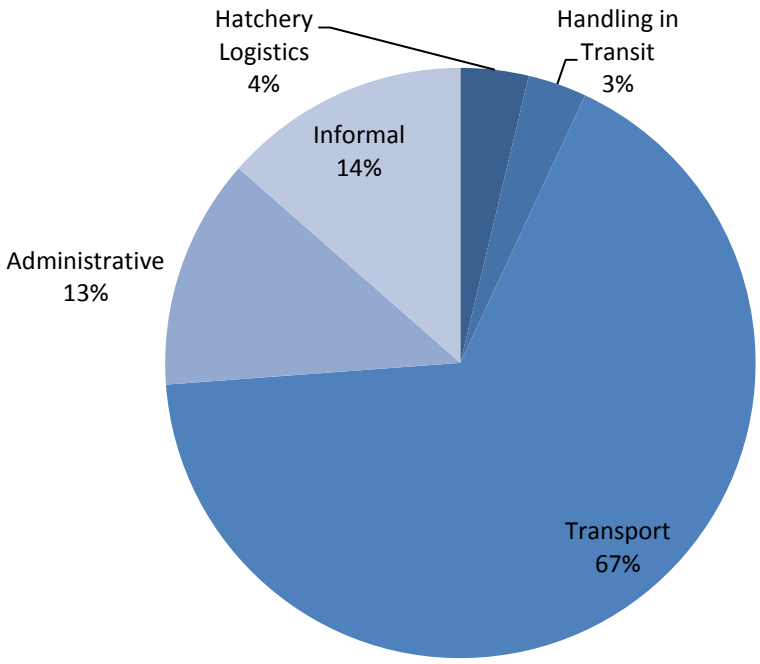
The following table presents these costs summarized by cost type:[I]

	US$/Box of 50 DOCs	Percent of Hatchery Price	Percent of Final Sales Price
Hatchery logistics	1.34	**3.00%**	**1.49%**
Handling in transit	1.16	**2.60%**	**1.29%**
Transport	24.16	**54.02%**	**26.81%**
Administrative	4.56	**10.21%**	**5.07%**
Informal	4.89	**10.93%**	**5.42%**
Total transport and logistics costs	**36.12**	**80.76%**	**40.08%**

The total transport and logistics costs amount to $36.12/box of 50 DOCs travelling from Kumasi to Cotonou, which equates to 80.76 percent of the farm gate price and 40.08 percent of the final end-market price, according to the baseline study.

As can be seen from the pie chart below, the most important driver of transport and logistics costs is transport costs, which represent 67 percent of the total costs (and include the lifetime effect of stressful transport).

[I] For an explanation of the cost categories, see the annex.



2.3 SUMMARY

For a box of 50 DOCs travelling from Kumasi to Cotonou, total transport and logistics costs are $36.12, which represents 81 percent of the hatchery price in Kumasi, and 40 percent of the end-market price in Cotonou.

Of these observed costs, 86 percent are represented by "extra costs," i.e., costs considered as unjustified, inefficient, or too expensive when compared with an optimized scenario. Thus, **34 percent of the end-market price for DOCs in Cotonou is considered to be represented by inefficient costs**.

Furthermore, the long transit time and stressful transit environment that DOCs go through to reach Cotonou is significantly detrimental to the DOCs' long-term health. As a result, end-market buyers are willing to pay a significant premium of 13 percent for DOCs imported from Europe via air under optimal transit conditions. This discount is applied to DOCs coming from Ghana, despite the fact that there is *no inherent difference* between Ghanaian and European DOCs, other than the time and conditions in which they travel.[2]

Therefore, in addition to the impact on the margin from high transport costs created by inefficiencies in the logistics chain, producers are obtaining significantly depressed revenues due to the impact of transport on the DOCs' quality. The premium for shipping chicks in optimal

[2] This was confirmed by value chain stakeholders during interviews. Furthermore, the Ghanaian hatcheries use European parent stock to produce their DOCs.

transit conditions to the end market is high, and there is a huge opportunity for hatcheries to vertically integrate down the supply chain in order to capture greater margin.

The gains from removing inefficiencies and improving the logistics process are thus extremely important, having the potential to increase the volume of trade in DOCs along this corridor by reducing costs to traders and improving the price, quality, and availability of DOCs for consumers in end markets.

The following table summarizes the extra costs by category:

Summary: Extra costs	Observed Cost ($/50 DOCs)	Optimized Cost ($/50 DOCs)	Extra Cost ($/50 DOCs)	Percent Extra Cost Over Observed Cost
Hatchery logistics	1.34	1.07	0.27	20.15%
Handling in transit	1.16	0.00	1.16	100.00%
Transport	24.16	3.49	20.67	86.62%
Administrative	4.56	0.62	3.95	86.49%
Informal	4.89	0.00	4.89	100.00%
Total transport and logistics costs	**36.12**	**5.18**	**30.94**	**85.67%**

2.4 ANALYSIS BY COST TYPE

2.4.1 TRANSPORT COSTS

Transport costs represent 67 percent of total observed transport and logistics costs, of which 87 percent is considered to be "extra costs." The main drivers of these extra costs are:

- Long-term effect on lifetime health and productivity of DOCs caused by long and stressful transport, all of which is considered to be extra cost.
- Direct cost of transport services, which because of the multiple changes in vehicles, small shipments, and use of non-specialized vehicles along the journey, mean low economies of scale are achieved.
- Physical losses (DOC mortality) of 4.53 percent caused by suboptimal transport environment: long journey times, multiple stops, and use of inappropriate vehicles. It is important to note, however, that this figure can occasionally be drastically increased (50-100 percent) if the journey does not go smoothly for any reason or if the trader does not adhere to best practices. This unreliability is a *major* concern for importers in end markets. Seventy-eight percent of these physical losses are considered to be unreasonable in comparison with an optimized scenario with a specialized vehicle (i.e., losses of no more than 1 percent).

2.4.2 INFORMAL COSTS

Informal costs (or bribes paid to control officials) represent 14 percent of total observed transport and logistics costs, and are considered "extra costs." Due to the fragile nature of the

cargo and high risk of mortality if the journey is delayed for any reason, traders are always willing to hand over bribes to avoid being held up.

- **Bribes extracted at borders:**
    - **Ghana/Togo.** Because the costs and waiting time/delay at the main border at Aflao are considered to be too high, almost all traders prefer to use the informal bush border to smuggle their DOCs into Togo. This is literally a gap in the hedge, accessible by a dirt road, and the actual border crossing is impassable by vehicles. Customs officials and military are stationed this post and extract bribes, generally on a per-box basis.
    - **Togo/Benin.** In general. traders use the main border into Benin, as they consider the bush border (which involves crossing a river on a pirogue) to be too dangerous. Bribes are paid to customs, veterinarians, and police on both sides of the border.
- Bribes extracted at checkpoints are common on each segment of the journey, mainly involving customs officials but also police and veterinarians.

  On a positive note, very few actors reported paying bribes on the Kumasi–Accra segment. Recent efforts of the Ghana National Association of Poultry Farmers (working with the Government of Ghana to build awareness of control officials along the road as to the fragile nature of DOC cargo) have led to less harassment of trucks carrying DOCs.
- Hatcheries also reported paying bribes to obtain required trading documentation.

2.4.3 ADMINISTRATIVE COSTS

Administrative costs represent 13 percent of total observed transport and logistics costs; the "extra costs" portion of administrative costs represents 5 percent of total transport and logistics costs. The main driver of these extra costs is veterinary import permits to bring DOCs into Benin. Under ECOWAS, Benin should recognize the veterinary health certificates provided in Ghana.

However, bribes extracted at borders entail avoidance of certain reasonable official costs. These reasonable official costs, which in an optimized scenario amount to approximately 2,500 West African Francs (CFAF) per shipment per border, should be included when calculating the true cost gains that would be made if border corruption was eliminated.

2.4.4 HANDLING IN TRANSIT

Handling in transit costs represent 3 percent of total observed transport and logistics costs, of which 100 percent is considered to be "extra costs." In this logistics chain, post-hatchery handling costs arise because of the multiple changes in vehicles that occur from production point to end market. Casual labor is hired to assist with transferring the DOC boxes from one vehicle to another. In an optimized scenario, with a single end-to-end journey in a specialized vehicle, these handling in transit costs would be eliminated.

2.4.5 HATCHERY LOGISTICS

Hatchery logistics costs represent 4 percent of total observed transport and logistics costs, of which 20 percent is considered to be "extra costs." Hatchery logistics entails pre-travel preparation of chicks, including sorting, sexing, vaccinating, and packing them into cartons. The costs are labor, losses during preparation, and purchase of carton boxes. Only the small level of losses during pre-transport preparation was found to be unjustified in this context.

3. TRANSPORT AND LOGISTICS COSTS OBSERVED IN NOVEMBER-DECEMBER 2011

This section describes bribes paid in November-December 2011 for six DOC deliveries by five traders/farmers (one trader/farmer took two deliveries) along the Kumasi–Cotonou corridor. It includes a description of observations and a comparison with costs observed in May-June 2011.

3.1 OBSERVATIONS IN NOVEMBER-DECEMBER 2011

In November 2011, the E-ATP Transport Assistant (TA) traveled to Kumasi to meet a Beninese DOC trader and poultry farmer at Topman farm. The TA observed him along the whole trip to Cotonou with DOCs.

First the TA explained the objective of the mission (update bribe cost), then showed him required documents. The same day at 4:30 pm they embarked into a motorcar with 150 cartons of 50 DOCs. They were checked at Nkawkaw without paying bribes; then Tesano, where policemen collected 5 Ghana Cedis (GHC). They reached Accra at 8:30 pm. The cartons were unloaded and then loaded into another vehicle. Around 9:00 pm, they departed Accra. Along the Ghana coastal corridor, they were stopped at Tsokpoli, Sege, Tefle, Klikor, and Tokor, where the trader/farmer paid respectively 5 GHC, 2 GHC, 20 GHC, 10 GHC, and 15 GHC—all to police officers. At midnight, they reached the Aflao bush Ghana/Togo border. On crossing the border, they were stopped by military officers who collected 10,200 CFAF. The cartons of DOCs were off-loaded and loaded into a Togolese motorcar which led them to the Hilla Condji border (Togo/Benin border) without being stopped. The cartons of DOCs were unloaded and re-loaded into a Beninese motorcar, checked by Togolese police and customs officers who collected 5,000 CFAF each. After crossing the border, the trader gave 1,000 CFAF to a Beninese policeman, 5,000 CFAF to a customs officer, and another 5,000 CFAF to an officer of the Ministry of Agriculture. The last itinerary (Benin border to Abomey-Calavi, a suburb of Cotonou) lasted one hour. It was hampered by two road blocks at Kome and Ouidah, mounted by policemen who collected 2,000 CFAF each.

Three days later, the TA returned to Kumasi, and followed a second delivery. However, prior to this trip. Kossi Dahoui, the E-ATP transport and logistics advisor (TLA) had sensitized poultry farmers and DOCs traders gathered in Cotonou about required documentation, rights, and obligations vis-à-vis road officials (i.e., not paying bribes). On his way back to Accra, the TLA stopped at each checkpoint, explained the fragility of DOCs, and requested public officials' contribution to the free movement of DOCs produced in Kumasi and sold to Togolese and Beninese poultry farmers.

The third, fourth, fifth, and sixth trips occurred respectively on December 2nd, 5th, 9th, and 27th. The TA was part of the last three deliveries, whereas the TLA followed the third delivery just in Benin.

The comparison of bribes monitored for the first trip and the five other trips shows some similarities and differences:

- **Similarities:** 1) very low bribe collection in Ghana, 2) no bribes paid along the Togo coastal corridor except once at Aneho (amounting 1,000 CFAF), and 3) very low bribe collection along the Benin coastal corridor.
- **Differences:** 1) variation of bribes collected at Aflao bush border (10,200 CFAF for the first trip, 15,000 CFAF for the second trip, 10,000 CFAF for the third trip, 10,000 CFAF for the fourth trip, 15 GHC and 20,000 CFAF for the fifth trip, and 5 GHC and 15,000 CFAF for the sixth trip); and 2) progressive reduction of informal payment at the Hilla Condji and Sanvee Condji, Benin/Togo borders (10,000 and 11,000 CFAF for the first trip; 2,000 and 2,000 CFAF for the second trip, the same amounts for the third and fourth trips; 2,000 and 1,000 CFAF for the fifth trip, and no payment for the sixth trip).

The update team observation along Aflao–Hilla Condji opposes the base study findings: "all traders/agents reported road harassment on this segment, with two checkpoints each extracting 5,000-20,000 CFAF depending on the size of the shipment." The situation along the Togolese corridor has improved tremendously due to the Togolese government's decision to remove all barriers and the awareness campaign carried out by the TLA in December 2011.

TABLE 1: AVERAGE BRIBES (IN US$) PAID IN NOVEMBER-DECEMBER 2011 ON CORRIDORS

	Total Bribes Paid (Aggregate of 6 Vehicles)	Bribes Paid per Vehicle (Average of 6 Vehicles)	Bribes Paid per Carton (Average of 150 Cartons)
Kumasi	1.330	0.220	0.001
N'kawkaw	0.660	0.110	0.000
Nsutam	2.670	0.440	0.003
Tesano	13.330	2.220	0.015
Prampram/Tsokpoli	2.170	0.360	0.002
Sege	11.330	1.890	0.013
Tefle/Sogakope	54.670	9.110	0.061
Dabala junction	2.670	0.440	0.003
Afife/Klikor	90.000	15.000	0.100
Tokor	40.000	6.670	0.044
Aflao bush border Ghana	13.330	2.210	0.015
Total GHANA	**232.160**	**38.670**	**0.257**
Aflao bush border Togo	186.510	31.080	0.207
Aneho	6.980	1.160	0.008
Hilla condji border	235.350	39.220	0.261
Total TOGO	**428.840**	**71.460**	**0.476**
Sanvee condji border	1.860	6.980	0.046
Ague/Grand Popo	9.300	1.550	0.010
Come	20.930	3.490	0.023
Ouidah	20.930	3.490	0.023
Total BENIN	**53.020**	**15.510**	**0.102**
Total Corridor	**714.020**	**125.640**	**0.835**

3.2 COMPARISON OF ORIGINAL STUDY AND UPDATE

The differences between the May-June and November-December observations are:

- Aflao to informal border: the original study found that a saloon car-size taxi was hired to go from Aflao to the border at an average cost of 4.30 US$/box of 50 DOCs. This contrasts with the update team's observation: none of the five traders/poultry farmers followed in November and December 2011 hired a vehicle from Aflao town to the Aflao bush border.
- None of the traders interviewed for the update study paid the 3.33 US$/box of 50 DOCs veterinary fee at Aflao.
- Road harassment Aflao–Hilla Condji: the original study found 0.59 US$/box of 50 DOCs, whereas the update team found negligible bribes on this segment.
- Ghana customs bribe at Aflao bush border: 0.48 US$/box of 50 DOCs in the original study; this contrasts with the observation of the update team, which did not see any

custom agents. This may be due to the border crossing taking place at midnight.

- Togo customs/military bribe at Aflao bush border: 1.05 US$/box of 50 DOC in the original study contrasts with the observation of the update team, which did not see any custom agents. This may be due to the border crossing taking place at midnight.

Table 2 compares the bribes between the two periods.

TABLE 2: COMPARISON OF BRIBES (IN US$ PER CARTON OF 50 DOCs) PAID IN NOVEMBER-DECEMBER 2011 WITH BRIBES REPORTED BY THE BASIS SURVEY

Location incurred	Bribes in May-June 2011	Bribes in November-December 2011
Kumasi-Accra	0.02	0.02
Accra-Aflao	0.17	0.22
Aflao Ghana border	0.48	0.02
Aflao Togo border	1.05	0.21
Aflao-Hilla Condji	0.59	0.01
Hilla Condji Togo border	0.72	0.26
Sanvee Condji Ghana border	0.62	0.05
Sanvee Condji-Cotonou	0.41	0.18
Total Corridor	**4.06**	**0.97**

3.3 UPDATED SUMMARY OF COST DRIVERS

As agreed with project management, which was based on input from USAID, the only transport costs to be updated were the road harassment variables. During the update, it became clear that the transporters utilized a different route to cross the border from Aflao to Lome, and therefore, as discussed above, some other costs were also updated. The following table shows the line items that have been updated:

Location	Item description	US$/box of 50 DOCs	Reported by
Kumasi	Veterinary movement permit	0.03	Baseline team
Kumasi	Veterinary health export document	0.12	Baseline team
Kumasi	Customs export document	0.50	Baseline team
Kumasi	Customs document bribe	0.83	Baseline team
Kumasi	Pre-transport preparation, labor	0.25	Baseline team

Kumasi	Losses during pre-transport preparation	0.27	Baseline team
Kumasi	Carton purchase	0.81	Baseline team
Kumasi–Accra	Transport to Accra	1.08	Baseline team
Kumasi–Accra	Road harassment Kumasi–Accra	0.02	Update team
Accra	Handling in Accra	0.84	Baseline team
Accra–Aflao	Transport Accra–Aflao	1.14	Baseline team
Aflao–informal border	Transport Aflao–informal border	0.00	Update team
Accra–Aflao	Road harassment Accra–Aflao	0.22	Update team
Aflao	Veterinary Inspection	0.00	Update Team
Aflao	Handling in Aflao	0.23	Baseline team
Aflao	Harassment at Ghana/Togo informal border	0.23	Update team
Kumasi–Aflao	Losses Kumasi–Aflao	1.81	Baseline team
Aflao–Hilla Condji	Transport Aflao–Hilla Condji	1.03	Baseline team
Aflao–Hilla Condji	Road harassment Aflao–Hilla Condji	0.01	Update team
Hilla Condji	Handling at Hilla Condji	0.09	Baseline team
Hilla Condji–Sanvee Condji	Harassment at Togo/Benin border	0.31	Update team
Sanvee Condji–Cotonou	Transport Sanvee Condji–Cotonou	0.89	Baseline team
Sanvee Condji–Cotonou	Road harassment Sanvee Condji–Cotonou	0.18	Update team
Cotonou	Veterinary import permit: Benin	0.58	Baseline team
Aflao–Cotonou	Losses Aflao–Cotonou	2.28	Baseline team
Kumasi–Cotonou	Lifetime effect of stressful transport	11.63	Baseline team

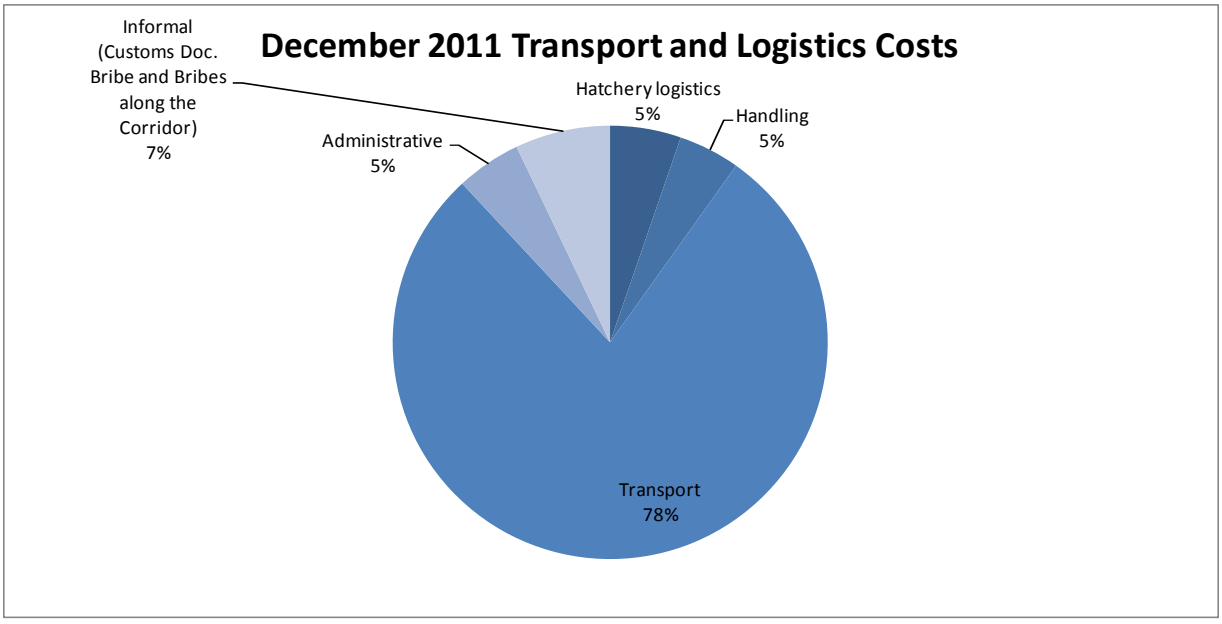
The following table is a summary of May-June 2011 (basis study) and November-December 2011 transport and logistics costs in US$/box of 50 DOCs:

Cost types	May-June 2011	November-December 2011	Variation (%)
Hatchery logistics	1.34	1.34	0%
Handling	1.16	1.16	0%
Transport	24.16	19.86	-18%
Administrative	4.56	1.23	-73%
Informal (Customs Doc. Bribe and Bribes along the Corridor)	4.89	1.8	-63%
Total transport and logistics costs	**36.12**	**25.39**	**-30%**

The total transport and logistics costs for November-December 2011 are 25.39 US$/box of 50 DOCs. This represents a **30 percent reduction** in costs since the baseline study in May-June 2011. This takes into account:

- Updated road harassment costs
- The fact that all five poultry farmers and traders followed for the update had not paid for transport from Aflao town to Aflao border
- None of Beninese and Togolese Kumasi DOC farmers and traders passed through the Aflao formal border or pay the veterinary service fee in Aflao (as observed in the basis study)

As can be seen from the pie chart below, the most important driver of transport and logistics costs is transport costs, which represent 78 percent of total costs (including the lifetime effect of stressful transport).



4. UPDATED CONCLUSIONS AND RECOMMENDATIONS

4.1 UPDATED CONCLUSIONS TO COST ANALYSIS

For a box of 50 DOCs travelling from Kumasi to Cotonou, total transport and logistics costs are **$25.39**. The gains from removing the inefficiencies and improving the logistics process are extremely important, having the potential to increase the volume of trade in DOCs along this corridor by reducing costs to traders and improving the price, quality, and availability of DOCs for consumers in end markets.

4.2 ACTIVITIES UNDERTAKE SINCE ORIGINAL STUDY

4.2.1 ACTIVITY NO. 1: SENSITIZATION WORKSHOP FOR WEST AFRICA POULTRY FARMERS ON NOVEMBER 27, 2011

The E-ATP transport team highlighted examples of best practices in transport and logistics and encouraged workshop participants to upgrade the following:

- Dissemination of best biosafety practices
- Awareness in improving logistics standards and facilitating resumption of regional trade in eggs-to-hatch and DOCs

4.2.2 ACTIVITY NO. 2: TRAINING OF OFFICIALS ON DOC BEST PRACTICES FOR LOGISTICS AND TRANSPORT ON DECEMBER 14-17, 2011

The E-ATP transport team trained officers (police; customs; gendarmerie; internal revenue; criminal investigation; and ministries of agriculture, health, and environment) posted at the Aflao–Kodzoviakope border and at checkpoints along the Kumasi–Cotonou corridor on the fragility of DOCs. They also raised awareness of regional trade policies.

4.3 UPDATED RECOMMENDATIONS

Since the key transport and logistics cost drivers remain in this update, the original recommendations are still relevant.

Many opportunities exist to improve the inefficiencies in this system and facilitate faster and better transport for DOCs along this corridor to:

- Reduce DOC mortality and the long-term health effects of stressful transport
- Reduce costs to value chain actors
- Eliminate or reduce the need for middlemen
- Increase reliability to end buyers

- Improve biosecurity
- And, overall, encourage greater volume of trade in DOCs along the corridor, increase quality and availability, and reduce the cost of poultry products to consumers in end markets

4.3.1 ASSISTANCE FOR HATCHERIES TO ESTABLISH SALES AND DISTRIBUTION OFFICES IN REGIONAL END MARKETS

The logistics system for DOCs moving from Kumasi to Cotonou is characterized by disjointedness and lack of continuity, DOCs changing hands and vehicles several times along the corridor, and cross-border trade facilitated by a network of middlemen. This leads to high costs and delays, as well as poor transit conditions for DOCs, meaning high in-transit mortality and long-term health effects, leading to lower prices.

Hatcheries *do not engage in end-to-end sales with their regional end markets*. Instead, networks of agents or middlemen/traders organize trade and transport of DOCs from Ghana to the end markets of Lomé and Cotonou. Opportunities are huge for hatcheries to capture greater margins through vertical integration.

Many of the larger hatcheries in Kumasi already successfully operate sales and distribution centers in Accra, from which they conduct sales to local farms and sell to agents trading to Togo and Benin. Setting up similar centers in Lomé and Cotonou would:

- Obviate the need for agents/middlemen
- Facilitate professional, smooth end-to-end transit in one vehicle (which would also improve biosecurity)
- Improve economies of scale
- Make purchase easier and more reliable for end customers, who could deal directly with the source hatchery rather than with agents, which would also improve biosecurity as DOC origin would be easily traceable

4.3.2 IMPROVEMENT OF BORDER PROCEDURES FOR DOCs

In almost all cases, DOCs are smuggled through the informal bush border into Togo and then high bribes are paid to control officials at the Togo/Benin border to avoid official customs fees and facilitate crossing the border as fast as possible.

Particularly at Aflao, current border crossing procedures at the main border and "official" costs make it *completely impractical* for traders to use it. The fragility of DOCs mean that any delays

(which are likely to be long at the main border) lead to high mortality. This encourages the preference for using the informal border to pass from Ghana into Togo.[3]

There is clearly an urgent need to:

- Reduce the practice of smuggling at Aflao, which not only means that a change in vehicle is necessary but also eliminates any necessary official controls (mainly related to biosecurity)
- Reduce costs to traders at the main border
- Speed up processing at the main border to reduce DOC mortality

Without improving border procedures at Aflao and Hilla Condji, it would be difficult to implement the other recommendations successfully, as the current situation (especially at Aflao) means that legal cross- border trade and smooth transit in one vehicle is impractical.

4.3.3 ORGANIZATION OF IMPORTERS FOR COORDINATED PURCHASING SCHEME

Individual imports of DOCs into the end markets of Lomé and Cotonou, organized by numerous agents and middlemen, are generally very small-scale and do not allow end buyers to take advantage of economies of scale. End buyers are not well-organized into networks, and associations find it difficult to attract members. These low economies of scale drive costs and transit times upward.

Associations in both Lomé and Cotonou expressed interest in the idea of assisting members to organize bulk orders of DOCs to improve economies of scale in purchasing.. Ideally, these purchases could be arranged directly with the Kumasi hatcheries, cutting out middlemen/agents. These higher-volume transactions could encourage hatcheries to engage more frequently in end-to-end trade with foreign markets, facilitate a smoother and faster transport for the DOCs, and add to their incentives to set up sales offices in end markets, while reducing costs and improving quality and reliability for end buyers.

4.3.4 ACCESS TO SPECIALIZED VEHICLES

One of the main problems in the existing logistics chain for DOCs is the widespread use of non-specialized vehicles, from converted "Benz Buses," to passenger buses (Tro-Tros), to taxis and even mopeds. Not only do these buses not allow for an optimal transit environment for DOCs (temperature and ventilation), but they also often mean it is difficult to stack the DOC boxes well, leading to further problems such as crushing, instability and falling over, and no ventilation. These factors lead to high mortality during transport. Furthermore, the lack of specialized

[3] A very telling anecdote: in one case, a trader with a semi-specialized vehicle would travel to Accra to collect the DOCs, drive them to the informal border at Aflao (which is impassable by vehicles), offload them onto the ground, then drive through the main border *empty* so he could avoid the majority of official fees and taxes, then circle round to the informal border on the Togo side to collect his DOCs and continue the journey east.

vehicles leads to serious biosecurity concerns, as vehicles that are not disinfected between uses and that often transport human passengers at the same time as DOCs.

In specialized vehicles, the driver can control the temperature and ventilation of the truck to ensure optimal transit conditions. Furthermore, the boxes can be loaded onto portable racks that can be wheeled in and out of the vehicle for easy loading and secured in the vehicle during transport. These racks also allow for proper ventilation and prevent crushing and instability. Specialized vehicles can also be easily cleaned and disinfected between uses.

Several options to facilitate access to specialized vehicles are available, as described in the following sections.

4.3.4.1 PARTNERSHIP WITH REGIONAL TRANSPORT PROVIDERS TO PROVIDE SPECIALIZED TRANSIT SERVICES TO DOC EXPORTERS

In interviews with actors along the value chain, it is clear that demand for specialized vehicles exists, and most people are very cognizant of the benefits of using specialized vehicles in terms of DOC health and biosecurity. Hatcheries, for example, would pay for specialized vehicles if they were available to rent.

Business planning, costing, and testing of the potential market would be necessary to establish that it would be a viable business. Some issues would need to be overcome:

- Highly trained drivers would be required, who understand the needs and requirements of transporting DOCs
- There would be a need to find goods to back-haul on the return journey (taking biosecurity into account)

4.3.4.2 ASSISTANCE FOR REGIONAL HATCHERIES TO PROCURE SPECIALIZED VEHICLES

The study team established that several hatcheries in Kumasi would like to procure their own specialized vehicles, but lacked the means to do so. Hatcheries expressed strong demand for concessional loans with which to buy these vehicles, as current commercial lending interest rates did not make it viable. Loans could be easily secured either on the vehicle itself of on other hatchery assets (land and buildings). Leasing arrangements would also be a good option in this case.

However, hatcheries would need to ensure that they transport enough volume in these vehicles to justify owning one. This problem could be overcome by assisting hatcheries to procure vehicles on a *collective basis*. One way this collective purchase could be organized is by setting up a nonprofit special-purpose company that would own and operate the vehicle, with each hatchery owning shares and purchasing services at a reduced price.

4.3.4.3 EXAMPLE OF DARKO FARMS TO HIGHLIGHT EXAMPLE OF BEST PRACTICES IN TRANSPORT AND LOGISTICS

There is only one example in Ghana of the use of a specialized vehicle for DOC transit—Darko Farms.[4] Darko Farms is one of the largest and best-established poultry companies in the region. Not only does it engage in DOC trade, it also raises chickens and sells processed chicken meat. Interviews with Darko established that its ownership and use of the specialized vehicle (which it purchased new from Holland) is economically viable and provides several benefits in terms of health and low mortality of the DOCs, as well as ease of loading and unloading.

Darko Farms could be used as an example of a success story to highlight to other regional hatcheries that this best practice is a viable business strategy and to encourage them to upgrade their current transportation methods.

4.3.5 TRAINING ON BEST PRACTICES

Simple improvements in transport and logistics and increased capacity of value chain actors could have great benefits for the value chain in terms of improved DOC health, reduced mortality, lower costs, and better biosecurity. Training should focus on:

- Best practice transport and logistics techniques and handling (see best practice guide)
- Biosecurity concerns/hazards and measures to be taken during transport, especially in relation to preventing the spread of avian influenza
- Procedures and required documentation for export to make border processing easier, so that traders and transporters will know their rights when face to face with potentially corrupt or poorly informed border officials, perhaps utilizing the *Trader-Transporter How-To Guide* and the *Trader-Transporter Cards* that the Policy and Transport teams of ATP/E-ATP have been developing
- Training on best practice transport biosecurity

[4] Akate Farms also has a semi-specialized vehicle, with a fan ventilation mechanism and racks inside to stack the boxes, but it does not allow for automatic temperature control by the driver.

ANNEX: ASSUMPTIONS FROM THE ORIGINAL STUDY

As stated in the introduction, the update team did not conduct an entirely new study to complete this update. The team assumed the following definitions, hypotheses, and cost findings.

DEFINITIONS AND ASSUMPTIONS

ARTICULATION OF RELEVANT COSTS

Each of the cost categories and cost line items identified were divided into Observed Cost, Extra Cost, and Optimized Cost, to the extent possible with the data available.

Observed Cost. Costs as observed in the field research, based on averages and most common responses from field interviews.

Extra Cost. A back-of-the-envelope estimation of the amount of the Observed Cost that is considered unnecessary, unjustified, or too expensive, based on a variety of factors to be explained in each instance. For example, bribes and administrative charges without receipts or for which no service is rendered are considered extra costs. In some instances, extra costs are calculated based on market observations or references to external sources. These benchmarks are used as a proxy for what a more competitive transport sector may be able to achieve in terms of lower prices.

Optimized Cost. In this study, this is defined as the Observed Cost minus the Extra Cost.

COST CATEGORIES

The following table lists the main categories of costs and examples of costs observed in the poultry value chain studied.

TABLE 3: CATEGORIES AND TYPES OF COSTS OBSERVED

Cost category	Examples of costs observed
Hatchery logistics All transport and logistics charges incurred at the hatchery post-hatching	• Pre-transport preparation • Cost of carton • Losses during pre-transport preparation
Handling in transit All charges for handling services rendered throughout the logistics process after leaving the	• After leaving hatchery, loading and unloading of boxes into various vehicles

hatchery	
Transport All charges for transport services from farm to end market	• Transport fees and charges • Losses during transport • Long-term effect of transport stress on chick health
Administrative All charges for formal trade facilitation and mandatory control procedures, for which a receipt is normally provided	• Mandatory veterinary inspections • Veterinary documentation • Official customs fees • Customs documentation
Informal Explicit bribes paid, for which no receipt is provided	• Bribes to obtain documentation • Bribes paid at checkpoints • Bribes paid at borders

These categories captured the majority of the costs during the field research from hatching to the market of final destination. When possible, copies of actual receipts were collected for formal fees.

Along the corridor studied, the main market for DOCs is *layers*, i.e., females raised as egg producers. Very little trade in *broiler* DOCs was observed, with actors citing competition from extra-regional imports of processed broiler meat as the main reason for this. Trade in *cock (rooster)* DOCs is even rarer, as demand for rooster meat is low, only arising during the Christmas period. **This study focuses only on trade in *layer* DOCs. Any reference to "chick" or "DOC" in this report refers to *layer DOCs only*.**

The point of reference for all costs along the DOC logistics chain is the smallest unit of normal trade: a box of 50 DOCs. This is standard practice along the corridor, and at no point did the study team observe trade in individual DOCs. All prices and costs are shown in US dollars. Monetized losses are based on cumulative loss multiplied by end market value.

For more information on the study methodology, please refer to the original study.